

Rec'd PCT/PTO 04 APR 2005

10/530253

RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/530253
Source: PCT
Date Processed by STIC: 4-13-05

ENTERED



PCT

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/530,253

DATE: 04/13/2005
TIME: 09:34:29

Input Set : A:\00400769.txt
Output Set: N:\CRF4\04132005\J530253.raw

3 <110> APPLICANT: Cassetti, Maria C.
 4 Smith, Larry
 5 Jeffrey K. Pullen
 6 Susan P. McElhiney
 8 <120> TITLE OF INVENTION: HUMAN PAPILLOMAVIRUS POLYPEPTIDES AND IMMUNOGENIC
 COMPOSITIONS
 10 <130> FILE REFERENCE: 00630/100M137-US2
 C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/530,253
 C--> 12 <141> CURRENT FILING DATE: 2005-04-04
 12 <150> PRIOR APPLICATION NUMBER: PCT/US2003/031726
 13 <151> PRIOR FILING DATE: 2003-10-02
 15 <150> PRIOR APPLICATION NUMBER: US 60/415,929
 16 <151> PRIOR FILING DATE: 2002-10-03
 18 <160> NUMBER OF SEQ ID NOS: 65
 20 <170> SOFTWARE: PatentIn version 3.1
 22 <210> SEQ ID NO: 1
 23 <211> LENGTH: 248
 24 <212> TYPE: PRT
 25 <213> ORGANISM: Human papillomavirus type 16
 27 <400> SEQUENCE: 1
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 33 Thr Glu Leu Gln Thr Thr Ile His Asp Ile Ile Leu Glu Cys Val Tyr
 34 20 25 30
 37 Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
 38 35 40 45
 41 Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Cys Asp
 42 50 55 60
 45 Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr Cys
 46 65 70 75 80
 49 Tyr Ser Val Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu
 50 85 90 95
 53 Cys Asp Leu Leu Ile Arg Cys Ile Asn Cys Gln Lys Pro Leu Cys Pro
 54 100 105 110
 57 Glu Glu Lys Gln Arg His Leu Asp Lys Lys Gln Arg Phe His Asn Ile
 58 115 120 125
 61 Arg Gly Arg Trp Thr Gly Arg Cys Met Ser Cys Cys Arg Ser Ser Arg
 62 130 135 140
 65 Thr Arg Arg Glu Thr Gln Leu His Gly Asp Thr Pro Thr Leu His Glu
 66 145 150 155 160
 69 Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu
 70 165 170 175
 73 Gln Leu Asn Asp Ser Ser Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala
 74 180 185 190

(PS.6)

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77 Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys
 78 195 200 205
 81 Cys Lys Cys Asp Ser Thr Leu Arg Leu Cys Val Gln Ser Thr His Val
 82 210 215 220
 85 Asp Ile Arg Thr Leu Glu Asp Leu Leu Met Gly Thr Leu Gly Ile Val
 86 225 230 235 240
 89 Cys Pro Ile Cys Ser Gln Lys Pro
 90 245
 93 <210> SEQ ID NO: 2
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 95 <212> TYPE: DNA
 96 <213> ORGANISM: Human papillomavirus type 16
 98 <400> SEQUENCE: 2
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 101 acaactatac atgatataat attagaatgt gtgtactgca agcaacagt actgcgacgt 120
 103 gaggtatatg actttgcatt tcgggattta tgcatacatat atagagatgg gaatccatat 180
 105 gctgtatgtg ataaatgttt aaagtttat tctaaaatta gtgagtatag acattattgt 240
 107 tatagtgtgt atggAACAAAC attagaacag caatacaaca aaccgttgg tgatttgta 300
 109 attaggtgtt ttaactgtca aaagccactg tgtcttgaag aaaagcaag acatctggac 360
 111 aaaaagcaaa gattccataa tataaggggg cggtggaccg gtcgatgtat gtcttggc 420
 113 agatcatcaa gaacacgtag agaaaacccag ctgcattggag atacaccatc attgcattgaa 480
 115 tatatgttag atttgcaacc agagacaact gatctact gttatgagca attaaatgac 540
 117 agctcagagg aggaggatga aatagatggt ccagctggac aagcagaacc ggacagagcc 600
 119 cattacaata ttgtAACCTT ttgttgcatt tgcgtactcta cgcttcggtt gtgcgtacaa 660
 121 agcacacacg tagacattcg tactttggaa gacctgttaa tggcacact aggaattgtg 720
 123 tgccccatct gttctcagaa accataa 747
 126 <210> SEQ ID NO: 3
 127 <211> LENGTH: 248
 128 <212> TYPE: PRT
 129 <213> ORGANISM: Human papillomavirus type 16
 131 <400> SEQUENCE: 3
 133 Met Phe Gln Asp Pro Gln Glu Arg Pro Arg Lys Leu Pro Gln Leu Cys
 134 1 5 10 15
 137 Thr Glu Leu Gln Thr Thr Ile His Asp Ile Ile Leu Glu Cys Val Tyr
 138 20 25 30
 141 Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
 142 35 40 45
 145 Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Gly Asp
 146 50 55 60
 149 Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr Cys
 150 65 70 75 80
 153 Tyr Ser Val Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu
 154 85 90 95
 157 Cys Asp Leu Leu Ile Arg Cys Ile Asn Gly Gln Lys Pro Leu Cys Pro
 158 100 105 110
 161 Glu Glu Lys Gln Arg His Leu Asp Lys Lys Gln Arg Phe His Asn Ile
 162 115 120 125
 165 Arg Gly Arg Trp Thr Gly Arg Cys Met Ser Cys Cys Arg Ser Ser Arg
 166 130 135 140

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169 Thr Arg Arg Glu Thr Gln Leu His Gly Asp Thr Pro Thr Leu His Glu
 170 145 150 155 160
 173 Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr Asp Leu Tyr Gly Tyr Gly
 174 165 170 175
 177 Gln Leu Asn Asp Ser Ser Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala
 178 180 185 190
 181 Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys
 182 195 200 205
 185 Cys Lys Cys Asp Ser Thr Leu Arg Leu Cys Val Gln Ser Thr His Val
 186 210 215 220
 189 Asp Ile Arg Thr Leu Glu Asp Leu Leu Met Gly Thr Leu Gly Ile Val
 190 225 230 235 240
 193 Cys Pro Ile Cys Ser Gln Lys Pro
 194 245
 197 <210> SEQ ID NO: 4
 198 <211> LENGTH: 747
 199 <212> TYPE: DNA
 200 <213> ORGANISM: Human papillomavirus type 16
 202 <400> SEQUENCE: 4
 203 atgtttcagg acccacagga gcgacccaga aagttaccac agttatgcac agagctgcaa 60
 205 acaactatac atgatataat attagaatgt gtgtactgca agcaacagtt actgcgcacgt 120
 207 gaggtatatg actttgcattt tcgggattta tgcatagtat atagagatgg gaatccatat 180
 209 gctgttaggtg ataaaatgtt aaagtttat tctaaaaatta gtgagtatag acattattgt 240
 211 tatagtgtgt atggaacaac attagaacag caatacaaca aaccgttgtg tgattttgtta 300
 213 attaggtgtt ttaacggtca aaagccactg tgtcctgaag aaaagcaaag acatctggac 360
 215 aaaaagcaaa gattccataa tataaggggg cggtgaccg gtcgatgtat gtcttgtgc 420
 217 agatcatcaa gaacacgtag agaaaacccag ctgcattggag atacacctac attgcattgaa 480
 219 tatatgttag atttgcacc agagacaact gatctctacg gttatgggca attaaatgac 540
 221 agctcagagg aggaggatga aatagatgtt ccagctggac aagcagaacc ggacagagcc 600
 223 cattacaata ttgttaacctt ttgttgcaag tgtgactcta cgcttcgggtt gtgcgtacaa 660
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 231 <211> LENGTH: 248
 232 <212> TYPE: PRT
 233 <213> ORGANISM: Human papillomavirus type 16
 235 <400> SEQUENCE: 5
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 238 1 5 10 15
 241 Thr Glu Leu Gln Thr Thr Ile His Asp Ile Ile Leu Glu Cys Val Tyr
 242 20 25 30
 245 Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg
 246 35 40 45
 249 Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Gly Asp
 250 50 55 60
 253 Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr Cys
 254 65 70 75 80
 257 Tyr Ser Val Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu
 258 85 90 95

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|-----|------------|-------------|------------------------------|-------------|-------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 261 | Cys | Asp | Leu | Leu | Ile | Arg | Cys | Ile | Asn | Gly | Gln | Lys | Pro | Leu | Cys | Pro |
| 262 | | | 100 | | | | | 105 | | | | | | 110 | | |
| 265 | Glu | Glu | Lys | Gln | Arg | His | Leu | Asp | Lys | Lys | Gln | Arg | Phe | His | Asn | Ile |
| 266 | | | 115 | | | | 120 | | | | | | 125 | | | |
| 269 | Arg | Gly | Arg | Trp | Thr | Gly | Arg | Cys | Met | Ser | Cys | Cys | Arg | Ser | Ser | Arg |
| 270 | | | 130 | | | | 135 | | | | | | 140 | | | |
| 273 | Thr | Arg | Arg | Glu | Thr | Gln | Leu | His | Gly | Asp | Thr | Pro | Thr | Leu | His | Glu |
| 274 | 145 | | | 150 | | | | 155 | | | | | | 160 | | |
| 277 | Tyr | Met | Leu | Asp | Leu | Gln | Pro | Glu | Thr | Thr | Asp | Leu | Tyr | Gly | Tyr | Gly |
| 278 | | | | | 165 | | | | 170 | | | | | 175 | | |
| 281 | Gln | Leu | Asn | Asp | Ser | Ser | Glu | Glu | Glu | Asp | Glu | Ile | Asp | Gly | Pro | Ala |
| 282 | | | 180 | | | | 185 | | | | | | 190 | | | |
| 285 | Gly | Gln | Ala | Glu | Pro | Asp | Arg | Ala | His | Tyr | Asn | Ile | Val | Thr | Phe | Cys |
| 286 | | | 195 | | | | 200 | | | | | | 205 | | | |
| 289 | Cys | Lys | Cys | Asp | Ser | Thr | Leu | Arg | Leu | Cys | Val | Gln | Ser | Thr | His | Val |
| 290 | | | 210 | | | | 215 | | | | | | 220 | | | |
| 293 | Asp | Ile | Arg | Thr | Leu | Glu | Asp | Leu | Leu | Met | Gly | Thr | Leu | Gly | Ile | Val |
| 294 | 225 | | | | 230 | | | | 235 | | | | | 240 | | |
| 297 | Gly | Pro | Ile | Cys | Ser | Gln | Lys | Pro | | | | | | | | |
| 298 | | | | 245 | | | | | | | | | | | | |
| 301 | <210> | SEQ | ID | NO: | 6 | | | | | | | | | | | |
| 302 | <211> | LENGTH: | 747 | | | | | | | | | | | | | |
| 303 | <212> | TYPE: | DNA | | | | | | | | | | | | | |
| 304 | <213> | ORGANISM: | Human papillomavirus type 16 | | | | | | | | | | | | | |
| 306 | <400> | SEQUENCE: | 6 | | | | | | | | | | | | | |
| 307 | atgtttcagg | acccacagga | gcgacccaga | aagttaaccac | agtttatgcac | agagctgcaa | | | | | | | | | | 60 |
| 309 | acaactatac | atgatataat | attagaatgt | gtgtactgca | agcaacagt | actgcgacgt | | | | | | | | | | 120 |
| 311 | gaggtatatg | actttgctt | tcgggattta | tgcatagtat | atagagatgg | aatccatat | | | | | | | | | | 180 |
| 313 | gctgttaggt | ataaaatgtt | aaagtttat | tctaaaatta | gtgagtatag | acattattgt | | | | | | | | | | 240 |
| 315 | tatagtgtgt | atggAACAAc | attagaacag | caatACAAC | aaccgttgt | tgatttgtt | | | | | | | | | | 300 |
| 317 | attaggtgt | ttaacggta | aaagccactg | tgtcctgaag | aaaagcaaaag | acatctggac | | | | | | | | | | 360 |
| 319 | aaaaagcaaa | gattccataa | tataaggggt | cggtgaccg | gtcgatgtat | gtcttgttgc | | | | | | | | | | 420 |
| 321 | agatcatcaa | gaacacgtag | agaaaACCCAG | ctgcatggag | atacacctac | attgcataaa | | | | | | | | | | 480 |
| 323 | tatatgttag | atttgcaacc | agagacaact | gatctctacg | gttatggca | attaaatgac | | | | | | | | | | 540 |
| 325 | agctcagagg | aggaggatga | aatagatgtt | ccagctggac | aagcagaacc | ggacagagcc | | | | | | | | | | 600 |
| 327 | cattacaata | ttgttaacctt | tttgtgcaag | tgtgactcta | cgcttcgggt | gtgcgtacaa | | | | | | | | | | 660 |
| 329 | agcacacacg | tagacattcg | tactttggaa | gacctgttaa | tgggcacact | aggaattgtg | | | | | | | | | | 720 |
| 331 | ggccccatct | gttctcagaa | accataaa | | | | | | | | | | | | | 747 |
| 334 | <210> | SEQ | ID | NO: | 7 | | | | | | | | | | | |
| 335 | <211> | LENGTH: | 248 | | | | | | | | | | | | | |
| 336 | <212> | TYPE: | PRT | | | | | | | | | | | | | |
| 337 | <213> | ORGANISM: | Human papillomavirus type 16 | | | | | | | | | | | | | |
| 339 | <400> | SEQUENCE: | 7 | | | | | | | | | | | | | |
| 341 | Met | His | Gly | Asp | Thr | Pro | Thr | Leu | His | Glu | Tyr | Met | Leu | Asp | Leu | Gln |
| 342 | 1 | | | 5 | | | | 10 | | | | | | 15 | | |
| 345 | Pro | Glu | Thr | Thr | Asp | Leu | Tyr | Cys | Tyr | Glu | Gln | Leu | Asn | Asp | Ser | Ser |
| 346 | | | | 20 | | | | 25 | | | | | | 30 | | |
| 349 | Glu | Glu | Glu | Asp | Glu | Ile | Asp | Gly | Pro | Ala | Gly | Gln | Ala | Glu | Pro | Asp |
| 350 | | | | 35 | | | | 40 | | | | | | 45 | | |

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/530,253

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Input Set : A:\00400769.txt
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| 353 | Arg | Ala | His | Tyr | Asn | Ile | Val | Thr | Phe | Cys | Cys | Lys | Cys | Asp | Ser | Thr |
| 354 | 50 | | | | | 55 | | | | | | 60 | | | | |
| 357 | Leu | Arg | Leu | Cys | Val | Gln | Ser | Thr | His | Val | Asp | Ile | Arg | Thr | Leu | Glu |
| 358 | 65 | | | | | 70 | | | | 75 | | | | | 80 | |
| 361 | Asp | Leu | Leu | Met | Gly | Thr | Leu | Gly | Ile | Val | Cys | Pro | Ile | Cys | Ser | Gln |
| 362 | | | | | | 85 | | | | 90 | | | | | 95 | |
| 365 | Lys | Pro | Phe | Gln | Asp | Pro | Gln | Glu | Arg | Pro | Arg | Lys | Leu | Pro | Gln | Leu |
| 366 | | | | | | 100 | | | 105 | | | | 110 | | | |
| 369 | Cys | Thr | Glu | Leu | Gln | Thr | Thr | Ile | His | Asp | Ile | Ile | Leu | Glu | Cys | Val |
| 370 | | | | | | 115 | | | 120 | | | | 125 | | | |
| 373 | Tyr | Cys | Lys | Gln | Gln | Leu | Leu | Arg | Arg | Glu | Val | Tyr | Asp | Phe | Ala | Phe |
| 374 | | | | | | 130 | | | 135 | | | 140 | | | | |
| 377 | Arg | Asp | Leu | Cys | Ile | Val | Tyr | Arg | Asp | Gly | Asn | Pro | Tyr | Ala | Val | Cys |
| 378 | 145 | | | | | 150 | | | | 155 | | | | | 160 | |
| 381 | Asp | Lys | Cys | Leu | Lys | Phe | Tyr | Ser | Lys | Ile | Ser | Glu | Tyr | Arg | His | Tyr |
| 382 | | | | | | 165 | | | 170 | | | 175 | | | | |
| 385 | Cys | Tyr | Ser | Val | Tyr | Gly | Thr | Thr | Leu | Glu | Gln | Gln | Tyr | Asn | Lys | Pro |
| 386 | | | | | | 180 | | | 185 | | | 190 | | | | |
| 389 | Leu | Cys | Asp | Leu | Leu | Ile | Arg | Cys | Ile | Asn | Cys | Gln | Lys | Pro | Leu | Cys |
| 390 | | | | | | 195 | | | 200 | | | 205 | | | | |
| 393 | Pro | Glu | Glu | Lys | Gln | Arg | His | Leu | Asp | Lys | Lys | Gln | Arg | Phe | His | Asn |
| 394 | | | | | | 210 | | | 215 | | | 220 | | | | |
| 397 | Ile | Arg | Gly | Arg | Trp | Thr | Gly | Arg | Cys | Met | Ser | Cys | Cys | Arg | Ser | Ser |
| 398 | 225 | | | | | 230 | | | | 235 | | | | | 240 | |
| 401 | Arg | Thr | Arg | Arg | Glu | Thr | Gln | Leu | | | | | | | | |
| 402 | | | | | 245 | | | | | | | | | | | |
| 405 | <210> | SEQ ID NO: | 8 | | | | | | | | | | | | | |
| 406 | <211> | LENGTH: | 747 | | | | | | | | | | | | | |
| 407 | <212> | TYPE: | DNA | | | | | | | | | | | | | |
| 408 | <213> | ORGANISM: | Human papillomavirus type 16 | | | | | | | | | | | | | |
| 410 | <400> | SEQUENCE: | 8 | | | | | | | | | | | | | |
| 411 | atgcatggag | atacacctac | attgcatgaa | tatatgttag | atttgcaacc | agagacaact | | | | | | | | | 60 | |
| 413 | gatctctact | gttatgagca | attaaatgac | agctcagagg | aggaggatga | aatagatgtt | | | | | | | | | 120 | |
| 415 | ccagctggac | aagcagaacc | ggacagagcc | cattacaata | ttgtaacctt | ttgttgcaag | | | | | | | | | 180 | |
| 417 | tgtgactcta | cgcttcggtt | gtgcgtacaa | agcacacacg | tagacattcg | tacatttgaa | | | | | | | | | 240 | |
| 419 | gacctgttaa | tgggcacact | aggaattgtg | tgccccatct | gttctcagaa | accatttcag | | | | | | | | | 300 | |
| 421 | gaccacacagg | agcgacccag | aaagttacca | cagttatgca | cagagctgca | aacaactata | | | | | | | | | 360 | |
| 423 | catgatataa | tattagaatg | tgtgactgc | aagcaacagt | tactgcgacg | tgaggtatat | | | | | | | | | 420 | |
| 425 | gactttgctt | ttcgggattt | atgcatacgt | tatagagatg | ggaatccata | tgctgtatgt | | | | | | | | | 480 | |
| 427 | gataaatgtt | taaagttta | ttctaaaatt | agtgagtata | gacattattg | ttatagtgtg | | | | | | | | | 540 | |
| 429 | tatggAACAA | cattagaaca | gcaatacaa | aaaccgttgt | gtgattttgtt | aattaggtgt | | | | | | | | | 600 | |
| 431 | attaactgtc | aaaagccact | gtgtcctgaa | aaaaagcaa | gacatctgga | caaaaagcaa | | | | | | | | | 660 | |
| 433 | agattccata | atataagggg | tcggtgacc | ggtcgatgta | tgtcttgg | cagatcatca | | | | | | | | | 720 | |
| 435 | agaacacgta | gagaaaccca | gctgtaa | | | | | | | | | | | | 747 | |
| 438 | <210> | SEQ ID NO: | 9 | | | | | | | | | | | | | |
| 439 | <211> | LENGTH: | 248 | | | | | | | | | | | | | |
| 440 | <212> | TYPE: | PRT | | | | | | | | | | | | | |
| 441 | <213> | ORGANISM: | Human papillomavirus type 16 | | | | | | | | | | | | | |
| 443 | <400> | SEQUENCE: | 9 | | | | | | | | | | | | | |

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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:39; Xaa Pos. 1,2,3,8,12,15,19,20,22,23,24,25,29,30,31,37,42,46,50,53
Seq#:39; Xaa Pos. 59,60,62,64,66,67,70,76,78,80,82,83,88,92,93,95,97,99,106
Seq#:39; Xaa Pos. 107,110,115,118,121,123,125,131,133,137,139,140,143,144
Seq#:39; Xaa Pos. 145,147,148,149,150,151,152
Seq#:40; Xaa Pos. 2,4,5,9,10,11,16,19,20,21,24,30,33,34,36,37,38,39,40,41
Seq#:40; Xaa Pos. 42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,59,61,62
Seq#:40; Xaa Pos. 63,66,68,69,70,71,72,74,78,79,80,84,94,95,99,102,103,104

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L:12 M:270 C: Current Application Number differs, Replaced Current Application No
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:1725 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39 after pos.:0
M:341 Repeated in SeqNo=39
L:1778 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40 after pos.:0
M:341 Repeated in SeqNo=40